S&P Global
Market Intelligence

Edge sustainability checklist

Edge compute presents environmental opportunities — and challenges.

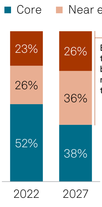
Savvy enterprises will factor sustainability impacts into the edge equation from the start.

Latency, performance and data sovereignty requirements are driving **exponential growth in edge workloads**, along with the power requirements to deliver them.

Data volumes for low-latency, edge-critical workloads are projected to grow at **80%** CAGR through 2027, with power demand growing at **87%** CAGR.

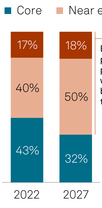
With a majority percentage of those IT and OT workloads landing in on-premises edge and as-a-service near-edge locations

Total data compute (PB) % split by venue segment



By 2027, 62% of total data will be computed at near or near the edge.

Total power demand (MW) % split by venue segment



By 2027, 68% of total power demand to process low-latency workloads data will be at near or near the edge.

While sustainability is becoming a corporate imperative, **most enterprises are in the early stages**, with edge sustainability just now coming onto the radar.

Just **43%** of enterprises have environmental targets in place today.

Just **25%** of enterprises cite sustainability among their edge drivers.

The more **distributed nature of edge venues** presents unique sustainability challenges and opportunities versus more centralized cloud infrastructure.

CORE

High-latency tolerant

Historical data analytics and archiving
Cloud economics: opex but costly data transfer
Centralized power inputs/management

NEAR-EDGE

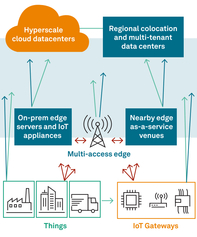
Low-to-medium latency

Data aggregation and increasing real-time capabilities
Multi-tenant datacenter & telco (MEC) edge facilities
Metro/regional power inputs/management

EDGE

Ultra-low latency

Real-time execution/instant-response
Highly-distributed on-premises compute
Often unconditioned, mix of legacy/modern infrastructure
High-security/reliability



As a best practice, enterprises must consider both “deploy the edge” and “use the edge” tactics to **optimize edge sustainability impacts**.

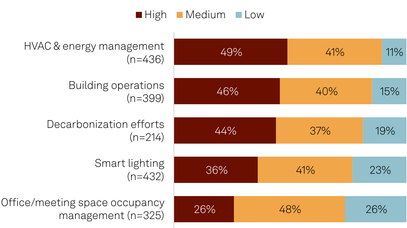
Deploy the edge

- Consider power impacts of on-premises edge versus centralized data processing in datacenters and clouds — including the costs to move data, and both the challenges and opportunities of distributed deployments.
- Leverage modern IT design (i.e., more efficient chips and servers, and automation).
- Look to edge-as-a-service providers for a more sustainable edge alternative such as multi-access edge computing (MEC)

Use the edge

- Factor in how AI-enabled insights at the edge can help enterprises meet sustainability goals.
- Bring IT and OT teams into the enterprise sustainability conversation.
- Leverage edge-enabled use cases to directly and indirectly impact sustainability (see chart).

The **most impactful** “use the edge” sustainability use cases include:



Key takeaway

While business support for and awareness of environmental goals is in its relative infancy, **edge-enabled sustainability approaches are critical** to fully align enterprise digital strategies with corporate sustainability mandates and targets.

Source: 451 Research’s Edge Workload Total Addressable Market (TAM) Analysis, 2023; Voice of the Enterprise: Internet of Things, OT Perspective, Use Cases and Outcomes 2023.

DELL Technologies intel

To learn more about our findings on edge sustainability, read the full report.

The content of this artifact is for educational purposes only. S&P Global Market Intelligence does not endorse any companies, technologies, products, services, or solutions. Permission to reprint or distribute any content from this artifact requires the prior written approval of S&P Global Market Intelligence.

©2023 S&P Global Market Intelligence